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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,699	07/02/2001	Dong-woo Lee	9898-176	2435
20575	7590	01/12/2005	EXAMINER	
MARGER JOHNSON & MCCOLLOM, P.C. 1030 SW MORRISON STREET PORTLAND, OR 97205			SINGH, DALIP K	
			ART UNIT	PAPER NUMBER
			2676	

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/898,699

Applicant(s)

LEE ET AL.

Examiner

Dalip K Singh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14-23 is/are rejected.
- 7) ☐ Claim(s) 2,4,5,8,18-20 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to applicant's amendment dated August 3, 2004 in response to PTO Office Action dated January 30, 2004. The amendments to claim(s) 12, 14, 15, 17 and 19; and the addition of claim(s) new claims 21-23 have been noted and entered in the record, and applicant's remarks have been carefully considered resulting in the action as set forth herein below.

Applicant's arguments filed August 3, 2004 have been fully considered but they are not persuasive.

2. Applicant's argument with respect to claim 1 that, " Moon reference does not disclose or suggest "a data modifying circuit distinct from the memory controller", applicant's attention is drawn to the fact that the data modifying circuit (the Z value comparator 81 A and outer-control logic 71) is not part of memory controller. Fig. 8 shows this clearly as the data modifying circuit is communicating as a separate block from the memory controller 72 and is part of the raster engine 70. Therefore, claim 1 limitations are anticipated by Moon reference.

3. Applicant's argument with respect to claim 9 that, " no mention of a control pin was given", the applicant's attention is drawn to col. 6, lines 36-65 wherein write-enable and write-disable signals are generated in tandem with each comparator which deals with z-buffer values.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,758,045 to Moon et al.

a. Regarding claim 1, Moon et al. **teaches** a memory cell array (Z buffer 81 of a ZDRAM, Fig. 8), a data modifying circuit (a DRAM including a Z value comparator, col. 6, lines 26-35) distinct from the memory controller (memory control logic 72, Fig. 8) adapted to receive corresponding new external depth data from the memory controller (memory control logic 72, Fig. 8), compare the new external depth data with the internal depth data, and write the external depth data in the memory cell array (Z buffer 81 of a ZDRAM, Fig. 8) over the internal depth data depending on the result of the comparison (....two outer pins used in transferring the result of comparison...for decoding a write-signal of memory with receiving the information of comparison result (LT. GT)...the Z buffer, that is, ZDRAM, further comprises...col. 6, lines 36-65).

b. Regarding claim 21, it is similar in scope to claim 1 above and is rejected under the same rationale.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim(s) 3, 6, 7, 9-12, 14-17 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,758,045 to Moon et al. as applied to claim 1 above, and further in view of U.S. Patent No. 5,301,263 to Dowdell.

a. Regarding claim 3, Moon et al. **discloses** a first control pin (81E, Fig. 9) for receiving a first control signal from the memory controller (memory control logic 72, Fig. 8); and a control circuit (comparator 81A, Fig. 9) for transmitting the external depth data to the memory cell array (81F, Fig. 9). However, Moon et al. **is silent about** bypassing

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the data modifying circuit depending upon on a state of the first control signal (81E, Fig. 9). Dowdell **discloses** in Fig. 1 the controller/memory module 100 which performs the updating operation, and makes use of an INVALID bit; and there is the case if $R1 \leq W1$ which indicates new value should not be written, effectively bypassing the control circuit (comparator 114, Fig. 1, Dowdell). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device as taught by Moon et al. with the feature "bypassing the data modifying circuit by leaving a z-value unchanged based on the INVALID bit" as taught by Dowdell **because** it results in conserving computing resources as no comparison has to take place.

b. Regarding claims 6 and 7, Moon et al. as modified by Dowdell **discloses** a register for storing the received new external depth data; and a compare circuit (equal comparator 112, greater than comparator 114, Fig. 1, Dowdell).

c. Regarding claim(s) 9-11, Moon et al. as modified by Dowdell **discloses** making use of most significant, middle significant and least significant bytes of the old and new z-values being read from memory 124 to determine which z-values needs to be written the memory 124.

d. Regarding amended claim 12, it is similar in scope to claim 6 above and is rejected under the same rationale and as far the newly recited limitation where a status signal indicating that the internal depth data has been modified, Moon **discloses** the outer-control logic receiving a comparison result (...a comparison result (LT, GT)...is generated...col. 6, lines 50-67) which would indicate a modified internal depth data.

e. Regarding amended claims 14 and 15, they are similar in scope to claim 7 above and are rejected under the same rationale.

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- f. Regarding claim 16, it is similar in scope to claim 9 above and is rejected under the same rationale.
- g. Regarding amended claim 17, it is similar in scope to claim 10 above and is rejected under the same rationale, and the amended claim recitation where comparison of internal and external depth data is done in units of X bits, such comparison is disclosed by Moon reference (col. 6, lines 50-65...8-bits per line...the outer-control logic receives eight information pairs...).
- h. Regarding claim 22, it is similar in scope to claim 3 above and is rejected under the same rationale.

Allowable Subject Matter

- 4. Claims 2, 4, 5, 8, 18-20 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

- 5. Applicant's arguments presented are not persuasive. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Dalip K. Singh** whose telephone number is **(703) 305-3895**.

The examiner can normally be reached on Mon-Thu (8:00AM-6:30PM) Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Matthew Bella**, can be reached at **(703) 308-6829**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to: (703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist). Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office at telephone number : (703)-306-0377.

dks

January 7, 2005



**MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600**